

REMARKS

Objection to the Specification

The Office has objected to the disclosure for the reasons set forth at page 2 of the Office Action. By this Amendment, Applicant has amended the specification as requested by the Office. Accordingly, Applicant asserts that the objection has been overcome.

Rejections Under 35 U.S.C. § 112

The Office has rejected claim 5 under 35 U.S.C. 112, second paragraph, as being indefinite because, according to the Office, it is not clear whether the recited ratio is a weight ratio or a mole ratio. Claim 5 has been amended to recite "mole ratio," thereby overcoming this rejection. Written description support for this amendment can be found, for example, at page 9, lines 10-20 of the originally filed specification. Accordingly, Applicant requests that the rejection be withdrawn.

The Office has also rejected claim 12 under 35 U.S.C. 112, second paragraph, as being indefinite for the reasons set forth at page 2 of the Office Action. Claim 12 has been amended to overcome the rejection. Accordingly, Applicant requests that the rejection be withdrawn.

Rejections Under 35 U.S.C. 102(b)

The Office has rejected claims 1-5, 8-9, 14-15, 18 and 39 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent No. 4,088,381 ("Soula"), for the reasons provided at pages 3 to 5 of the outstanding Office Action. Applicant respectfully traverses the rejection.

A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. MPEP § 2131. "The identical invention must be shown in as complete detail as is contained in the ... claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

Applicant's independent claims 1, 14 and 39 recite, *inter alia*, a reaction product of a treated amine and a compound, as set forth in the above Amendments to the Claims, wherein the treated amine comprises an aliphatic or aromatic amine containing at least one primary or secondary amino group reacted with acrylonitrile or at least one homologue thereof, followed by reduction to the primary amine, *with the proviso that if the aliphatic or aromatic amine is a hydroxyamine, the hydroxyamine is chosen from oligomers, polymers, aminoethylethanolamine, aminopropyldiethanolamine, partially propoxylated hexamethylene diamine, 3-amino-1,2-propanediol, tris(hydroxymethyl)aminomethane, and 2-amino-1,3-propanediol.* [Emphasis Added]

Soula fails to teach the claimed treated amine. Instead, Soula teaches polyamines obtained by cyanoethylation of alkanolamines of formula (III), as set forth at column 3, lines 43-56. The formula (III) alkanolamines of Soula are hydroxyamines that do not fall within the proviso of amended claims 1, 14, and 39, and therefore would not result in Applicant's treated amines, as claimed. For at least this reason, every limitation of the claims is not taught. Accordingly, Applicant asserts that no *prima facie* case of anticipation exists, and the rejection should be withdrawn.

Rejections Under 35 U.S.C. 103

Soula in view of Papay

The Office has rejected claims 6, 11-12, 16-17 and 21-22 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of U.S. Patent No. 5,652,201 ("Papay"), for the reasons provided at pages 6 to 7 of the outstanding Office Action.

For the reasons described above, Soula fails to teach all the limitations of claims 1 and 14. Claims 6, 11-12, and 16-17 depend either directly or indirectly from, and therefore include all the limitations of, claims 1 and 14. Further, Papay fails to remedy the deficiencies of Soula because it would not have been obvious to combine the teachings of Soula and Papay.

Specifically, Soula is directed to compositions comprising at least one succinimide having an ether $[-r-O-r']$ radical containing substituent. See column 1, lines 38-50. In order to form this specific succinimide compound, polyamines are employed which are obtained by cyanoethylation of alkanolamines, as described at column 3, lines 43 to 56 of Soula.

Papay, on the other hand, is directed to oleaginous compositions comprising, among other things, one or more oil-soluble boron-free additive compositions formed by heating (i) at least one boron-free oil-soluble ashless dispersant containing basic nitrogen and/or at least one hydroxyl group, with (ii) at least one inorganic phosphorus acid such that a liquid boron-free phosphorus containing composition is formed. See Abstract. Mannich polyamine dispersants are taught, as described in columns 20 to 23.

However, the Mannich polyamine dispersants of Papay are significantly different from the ether substituted succinimide dispersants of Soula. There is little or no suggestion provided by Soula or Papay that the Mannich adducts of Papay should be used to form the very different compounds of Soula, and thus there is insufficient motivation to support the combination. Furthermore, even if the Mannich reactants of Papay were combined with the polyamines of Soula, it would not result in applicant's claimed invention, because the polyamines of Soula are formed using hydroxyamines that do not fall within the claims, as described above. For at least these reasons, no prima face case of obviousness exists and the rejection should be withdrawn.

Soula in view of Chung

The Office has rejected claim 7 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of U.S. Patent No. 4,735,736 ("Chung"), for the reasons provided at pages 7 to 8 of the outstanding Office Action. For the reasons described above, Soula fails to teach all the limitations of claim 1.

Claim 7 depends either directly or indirectly from, and therefore include all the limitations of, claim 1. Further, Chung fails to remedy the deficiencies of Soula. Instead, Chung is directed to viscosity index improvers, such as ethylene copolymers grafted with unsaturated acid material followed by reaction with polyamine. See Abstract.

Because Chung fails to provide the missing teachings of Soula, no *prima facie* case of obviousness exists. For at least this reason, the rejection should be withdrawn.

Soula in view of either Lambert or Lambert and Papay

The Office has rejected claims 30-32 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of U.S. Patent No. 5,888,947 ("Lambert"), for the reasons provided at page 9 of the outstanding Office Action. In addition, the Office has rejected claims 33-34 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Lambert and Papay, for the reasons provided at pages 9-10 of the outstanding Office Action.

Claim 30 has been amended to include the proviso of claim 1, and therefore is allowable over Soula at least for the reasons discussed above. Further, neither Lambert, as applied to claims 30 to 32, nor the combination of Lambert and Papay, as applied to claims 33 and 34, remedy the deficiencies of Soula.

Instead, Lambert is directed to vegetable oil based lubricants derived primarily from plants. Lambert, column 3, lines 57-61. And, for the reasons described above, there is no motivation to combine the teachings of Papay with Soula.

Because neither Lambert nor the combination of Lambert and Papay remedy the deficiencies of Soula, no *prima facie* case of obviousness exists. For at least this reason, the rejections should be withdrawn.

Soula in view of either Lambert and Galka, or Lambert, Galka and Papay

The Office has rejected claims 10 and 24-27 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Lambert, and further in view of U.S. Patent No. 6,427,647 ("Galka"), for the reasons provided at pages 9-10 of the outstanding Office Action. The Office also has rejected claims 28-29 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Lambert, Galka and Papay, for the reasons provided

at pages 11-12 of the outstanding Office Action. Applicant respectfully traverses these rejections.

Claim 10 is dependent on claim 1, and therefore includes all the limitations of claim 1. Claim 24 has been amended to include the proviso of claim 1, and claims 25 to 29 depend therefrom. Accordingly, for similar reasons as described above for claim 1, Soula fails to teach all of the limitations of claims 10 and 24 to 29.

Galka does not remedy the deficiencies of Soula. Instead, Galka is directed to a fuel injection system for a large two-stroke engine. See column 1, lines 66-67. For the reasons described above, neither Lambert or Papay remedy the deficiencies of Soula.

Thus, neither Soula in view of Lambert and Galka, as applied to claims 10 and 24-27, nor the Soula/Lambert/Galka and Papay combination, as applied to claims 28 and 29, provide a *prima facie* case of obviousness. Accordingly, Applicant respectfully requests that the rejections be withdrawn.

Soula in view of Steckel

The Office has rejected claims 13, 19-20, 23 and 35 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of U.S. Patent No. 6,299,655 ("Steckel"), for the reasons provided at pages 8 to 9 of the outstanding Office Action. Specifically, the Office has alleged that Soula teaches the reaction product of a succinic anhydride and a treated amine as a dispersant. The Office admits that Soula fails to teach the dispersant for use as a fuel additive.

Soula is directed to lubricating oil compositions comprising at least one succinimide having an ether $[-r-O-r']$ radical containing substituent. See column 1, lines 38-50. Soula teaches that these compositions are particularly suitable for use as

detergent/dispersing agents additives, anti-rust additives and anti-foam additives for engine oils. See column 1, lines 19-23.

Steckel, on the other hand, is directed to a composition comprising a major amount of a diesel fuel oil and a minor amount of a high base containing dispersant wherein the product obtained by multiplying the percent nitrogen content by the weight average molecular weight of the dispersant ranges from about 45,000 to about 100,000. See column 2, lines 9-19. In order to meet these dispersant requirements, Steckel teaches that the dispersants should have high molecular weights and high base numbers. See column 2, lines 25-26. For example, the specific dispersants taught by Steckel, such as those shown in Table I, have relatively high molecular weights, such as 15000 or more, and/or have a relatively high percent of nitrogen of greater than 2.3%, indicating a high base number.

The teachings of Steckel do not provide motivation to use the dispersants of Soula in a fuel because the dispersants of Soula do not appear to necessarily meet the requirements of high molecular weight and high base number set forth in Steckel. For instance, the nitrogen content in the example compounds of Soula only ranges from about 1 % to about 1.77 %. See Example 1, at column 7, line 46 and Example 8, lines 45-47, as well as the other nitrogen contents set forth in Examples 2 to 7 and 9. Given these low nitrogen percents, the dispersants would need a very high molecular weight to meet Steckel's 45,000 minimum for the product of nitrogen content and molecular weight. However, the example dispersant compounds of Soula are made with a relatively low molecular weight PIBSA derived from a polyisobutene having a molecular weight of only about 1000, and thus will not likely meet the dispersant requirements of

Steckel. See Example 1, column 7, lines 32-37. For example, the tris-polyisobutenylsuccinimide compounds of Example 1 have a nitrogen content of only about 1 %, and thus will not have a molecular weight anywhere close to the about 45,000 that would be required to meet the requirement for the Steckel dispersants.

Thus, because the Soula dispersants do not meet the requirements of Steckel, one of ordinary skill in the art would not be motivated to use them in a fuel, as asserted by the Office. For at least this reason, there is no motivation to combine the references, and the rejections should be withdrawn.

Soula in view of Steckel and Papay

The Office has rejected claims 36-38 under 35 U.S.C. 103(a) as being unpatentable over Soula in view of Steckel, and further in view of Papay, for the reasons provided at page 12 of the outstanding Office Action.

Claims 36 to 38 depend, either directly or indirectly, from claim 35. For the reasons set forth above, there is not motivation to combine the teachings of Steckel with Soula, and thus no *prima facie* case of obviousness exists for claim 35.

Papay fails to remedy the defects of the Soula/Steckel combination by providing motivation for using the dispersants of Soula in a fuel. Instead, Papay is generally directed to lubricant compositions. See e.g., Papay, Title, and column 4, lines 53-55. Because Papay fails to remedy the Soula/Steckel combination, no *prima facie* case of obviousness exists, and the rejection should be withdrawn.


Conclusion

In view of the foregoing amendments and remarks, Applicant respectfully requests reconsideration of this application and the timely allowance of the pending claims.

Please grant any extensions of time required to enter this response and charge any additional required fees to our deposit account 50-2961.

Respectfully submitted,

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